

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Amended) An electric motor comprising:
a stator for producing a magnetic field;
a rotor rotated by said magnetic field;
a motor shaft coupled to said rotor; and
a first set of passageways through said rotor to conduct a liquid coolant
~~wherein said motor shaft includes an interior surface that is cone shaped to conduct~~
~~a liquid coolant through said interior surface to cool the electric motor.~~
2. (original) The electric motor of Claim 1 wherein said stator includes current carrying coils to generate said magnetic field.
3. (original) The electric motor of Claim 1 wherein said rotor is a squirrel cage rotor.
4. (original) The electric motor of Claim 1 wherein said rotor includes permanent magnets.
5. (Amended) The electric motor of Claim 1 ~~further including a first set of~~
~~passageways through said rotor to conduct a liquid coolant~~ wherein said motor shaft includes an
interior surface that is cone shaped to conduct a liquid coolant through said interior surface to
cool the electric motor.
6. (Amended) The electric motor of Claim ~~5~~ 1 wherein said first set of passageways has entrance openings and exit openings, said entrance openings oriented about

said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter.

7. (original) The electric motor of Claim 1 further including a second set of passageways between said rotor and said motor shaft.

8. (original) The electric motor of Claim 7 wherein said second set of passageways have entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter.

9. (Amended) An electric motor comprising:

a wound stator, said wound stator conducting current to generate a magnetic field;

a rotor rotated by said magnetic field;

a motor shaft coupled to said rotor, said motor shaft including a cone shaped interior surface having an entrance opening and an exit opening; and

a liquid coolant propelled by centrifugal force generated by the rotation of said rotor through said cone shaped interior surface, said liquid coolant cooling the electric motor;
and

a first set of passageways through said rotor to conduct said liquid coolant through said rotor.

10. (original) The electric motor of claim 9 wherein said rotor is a squirrel cage rotor.

11. (original) The electric motor of Claim 9, wherein said rotor includes permanent magnets.

12. (original) The electric motor of Claim 9 wherein said liquid coolant is oil.

13. cancelled.

14. (Amended) The electric motor of Claim ~~13~~ 9 wherein said first set of passageways have entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter.

15. (original) The electric motor of Claim 9 further including a second set of passageways between said rotor and said motor shaft.

16. (original) The electric motor of Claim 15 wherein said second set of passageways have entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter.

17. (Amended) A method of cooling an electric motor comprising:

providing an electric motor having a stator, a rotor magnetically coupled to said stator, and a hollow motor shaft coupled to said rotor;

rotating said rotor and said motor shaft; and

generating a centrifugal force to force a liquid coolant through ~~said hollow motor shaft~~ passageways in said rotor.

Amendments to the Drawings:

The attached sheet of drawings includes adding reference numeral 38 to the opening of passageway 38 to Figure 1. This sheet, which includes Figure 1, replaces the original sheet including Figures 1.

Attachment: Replacement sheet

Remarks/Arguments

This amendment is in response to the Office Action mailed on April 23, 2003 wherein Claims 1-17 were rejected. Claims 1, 5, 6, 9, 14, and 17 have been amended and Claims 1-12 and 14-17 remain pending.

Objections to the Drawings

Applicants have included a proposed drawing correction to address the Examiner's objection.

Claim Rejections Under 35 USC §102 and 103

On page 2 of the Office Action, the Examiner rejected Claims 1-4, 9, 10-12, and 17 under 35 USC §102(b) as being anticipated by Yamamoto. On page 3 of the Office Action, Claims 5, 6, 13 and 14 were rejected under 35 USC §103 as being unpatentable over Yamamoto in view of Rudolf.

Applicants have amended Claims 1, 9, and 17 to better describe the present invention. The Examiner on page 4 of the Final Office Action stated Yamamoto does not include a first set of passageways through said rotor to conduct a liquid coolant. Applicants agree with this statement. The Examiner on page 4 of the Office Action further stated that Rudolf includes a first set of passageways to conduct a liquid coolant for the purpose of cooling an electric motor. Applicants respectfully disagree with the Examiner. Rudolf is completely silent with respect to a motor cooling application, rather Rudolf is focused on reducing the momentum of the a motor to improve motor efficiency by hollowing out an electric motor rotor, as disclosed in column 2, lines 29-45 and seen in Figure 1. Yamamoto and Rudolf, singly or in combination, do not teach or suggest the claimed present invention.

The Examiner has failed to explain how and why the claimed subject matter is rendered unpatentable over the prior art and point out where each of the specific limitations recited in the rejected claims is found in the prior art relied on. If the Examiner relies on personal knowledge that the apparatus of the present invention is obvious, Applicants respectfully

request support for this assertion in the form of an affidavit that shall be subject to contradiction or explanation by the affidavits of the Applicants and other persons under 37 CFR 1.104(d)(2).

CONCLUSION

The entire Office Action dated April 23, 2003, has been carefully reviewed, and this response is submitted as being fully responsive thereto. In view of the preceding remarks, Applicants respectfully submit that Claims 1-12 and 14-20 are in condition for allowance and respectfully request such action at the Examiner's earliest convenience. If the Examiner believes that personal contact would be advantageous to the disposition of this case, he is requested to call the undersigned at his earliest convenience.

Please charge any fee for adding the new claims, and any other fees which may be due, to Deposit Account No. 07-0960.

Respectfully submitted,



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Enclosure